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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,957	10/27/2003	Donald C.D. Chang	PD-980263A	6150

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THE DIRECTV GROUP INC
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EXAMINER

MULL, FRED H

ART UNIT PAPER NUMBER

3662

DATE MAILED: 09/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/694,957

Applicant(s)

CHANG ET AL.

Examiner

Fred H. Mull

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

7-23-2004

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-17 is/are allowed.
- 6) ☐ Claim(s) 1-6, 18-26, 31 is/are rejected.
- 7) ☒ Claim(s) 27-30 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments on p. 6, with respect to the rejection(s) of claims 1-6 over 35 USC 112 2nd paragraph have been fully considered and are persuasive. This rejection(s) has been withdrawn.

2. Applicant's arguments on p. 6, with respect to the rejection(s) of claims 18-26 and 31 over Wolcott have been fully considered but they are not persuasive.

Applicant argues Wolcott does not disclose $n \times 4$ antenna elements. However, in Fig. 6, 112R shows an array with 4×4 receive antenna elements, and 112T shows an array with 4×4 transmit elements.

3. Various new rejections are added.

35 USC § 112 6th Paragraph

The following is a quotation of the sixth paragraph of 35 U.S.C. 112:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

4. Claim(s) 22-24 is/are interpreted by the examiner as invoking 35 USC 112 6th paragraph (means plus function). See MPEP § 2181.

Specification

5. The disclosure is objected to because of the following informalities:

On p. 3, line 20, "beam" should be --beams--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it is not clear what "to reduce a frequency bandwidth and a range of potential arrivals of said signals" means. The two passages in the specification that seem most relevant are:

"The filtering circuit determining a communications signal direction of the satellite communications signal and tunes the filter to reduce a filter bandwidth and a frequency range of said beam signal prior to processing through the second one dimensional digital beam forming circuit." (p. 3, lines 20-25, emphasis added).

"The beam forming reduces the field of view of the potential directions of the signal arrival." (p. 21, lines 27-29, emphasis added).

Does the cited claim language mean "to reduce a frequency bandwidth and to reduce a frequency range of potential arrivals of said signals" or does it mean "to reduce

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a frequency bandwidth and to reduce a range of directions of potential arrivals of said signals”?

Claims 2-6 depend from an indefinite antecedent claim.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Application claims 1-5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over patent claims 1-5 of U.S. Patent No. 6,667,715 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patent claims describe an apparatus performing the method that is claimed in the application claims.

In regard to claim 1, the patent discloses forming a beam in a first direction (col. 12, line 22); determining a direction and frequency bandwidth of the communications signal to reduce a frequency bandwidth and a range of potential arrivals of said signal (col. 12, lines 28-33); and then forming a beam in a second direction (col. 12, line 24).

In regard to claim 2, the patent further discloses said first direction is orthogonal to said second direction (col. 12, lines 33-34).

In regard to claim 3, the patent further discloses generating a first direction error signal, a second direction error signal, a timing error signal, and a frequency error signals (col. 12, lines 36-38).

In regard to claim 4, the patent further discloses receiving said first direction error signals and said second direction error signal in a two-dimensional beam forming circuit (col. 12, lines 40-43).

In regard to claim 5, the patent further discloses detecting symbols in the signal (col. 12, lines 45-46).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 18, 21, and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Wolcott.

In regard to claim 18, Wolcott discloses a receive digital signal processing circuit comprising: a receive digital beam forming circuit (113, Fig. 6) coupled to

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$n \times 4$ receive elements (112R), wherein n is an integer at least equal to 1 (here $n=4$), and a transmit digital signal processing circuit comprising: a transmit digital beamforming circuit (1113) coupled to $n \times 4$ transmit elements (112T), wherein n is an integer at least equal to 1 (here $n=4$).

In regard to claim 21, Wolcott further discloses the transmit digital beam forming circuit comprises a two-dimensional beam forming circuit (113, where it beamforms for a two-dimensional array).

In regard to claim 31, Wolcott further discloses that the $n \times 4$ receive array is a 4×4 receive array (112R) and the $n \times 4$ transmit array is a 4×4 transmit array (112T).

9. Claims 18 and 23-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Yukitomo '645.

In regard to claim 18, Yukitomo '645 discloses a receive digital signal processing circuit comprising: a receive digital beam forming circuit (109, Fig. 3) coupled to $n \times 4$ receive elements (101-104), wherein n is an integer at least equal to 1 (here $n=1$), and a transmit digital signal processing circuit comprising: a transmit digital beamforming circuit (114) coupled to $n \times 4$ transmit elements (101-104), wherein n is an integer at least equal to 1 (here $n=1$).

In regard to claims 23-24, Yukitomo '645 further discloses the receive digital signal processing circuit is coupled to means for controlling power, aiding orientation and velocity (col. 2, lines 7-60).

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10. Claims 18 and 24-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Yukitomo '149.

In regard to claim 18, Yukitomo '149 discloses a receive digital signal processing circuit comprising: a receive digital beam forming circuit (121, Fig. 3) coupled to $n \times 4$ receive elements (101-104), wherein n is an integer at least equal to 1 (here $n=1$), and a transmit digital signal processing circuit comprising: a transmit digital beamforming circuit (128) coupled to $n \times 4$ transmit elements (133-136), wherein n is an integer at least equal to 1 (here $n=1$).

In regard to claim 24, Yukitomo '149 further discloses the transmit digital signal processing circuit is coupled to means for controlling power (col. 3, lines 47-62; col. 4, lines 20-29).

In regard to claim 25, Yukitomo '149 further discloses the transmit digital beam forming circuit is coupled to the receive digital signal processing circuit for receiving correction factors (col. 3, lines 30-62).

11. Claims 18-19, 21-22, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Obayashi.

In regard to claim 18, Obayashi discloses a receive digital signal processing circuit comprising: a receive digital beam forming circuit (117, Fig. 24) coupled to $n \times 4$ receive elements (101), wherein n is an integer at least equal to 1 (here $n=1$, although each antenna can be a subarray, in which case n would be greater than one (col. 5, lines 19-28)), and a transmit digital signal processing circuit comprising: a

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transmit digital beamforming circuit (208) coupled to $n \times 4$ transmit elements (201), wherein n is an integer at least equal to 1 (here $n=1$, although each antenna can be a subarray, in which case n would be greater than one (col. 5, lines 19-28)).

In regard to claim 19, Obayashi further discloses the receive elements are partitioned into subarrays of four elements each (col. 5, lines 19-28).

In regard to claim 21, Obayashi further discloses the transmit digital beam forming circuit comprises a two-dimensional beam forming circuit (col. 5, lines 19-28).

In regard to claim 22, Obayashi further discloses the receive digital signal processing circuit further comprises means for filtering (107; col. 5, line 45).

In regard to claim 26, Obayashi further discloses each of the transmit elements has an associated latch (the elements are clearly connected to the rest of the structure), digital-to analog converter (122, Fig. 2, which is a detailed view of 113, Fig. 24), local oscillator/mixer (105/104), beam band pass filter (107), and amplifier (103).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 20 and 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Obayashi.

In regard to claim 20, it is well known that a two one-dimensional beamformers is interchangeable with a single two-dimensional beamformer.

In regard to claim 31, since Obayashi discloses that each element may be a subarray, it would have been obvious that the subarray size could be chosen to be four, thus giving a 4 x 4 array of elements.

Allowable Subject Matter

13. Claim(s) 7-17 is/are allowed.
14. Claim(s) 27-30 is/are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred H. Mull whose telephone number is 703-305-1250. The examiner can normally be reached on M-F 9:00 - 5:00.

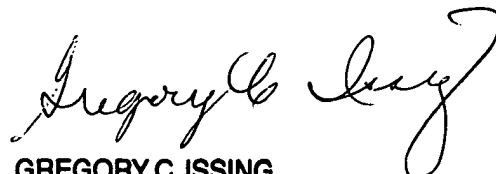
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on 703-360-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fred H. Mull
Examiner
Art Unit 3662

fhm



GREGORY C. ISSING
PRIMARY EXAMINER